

Quiz 1

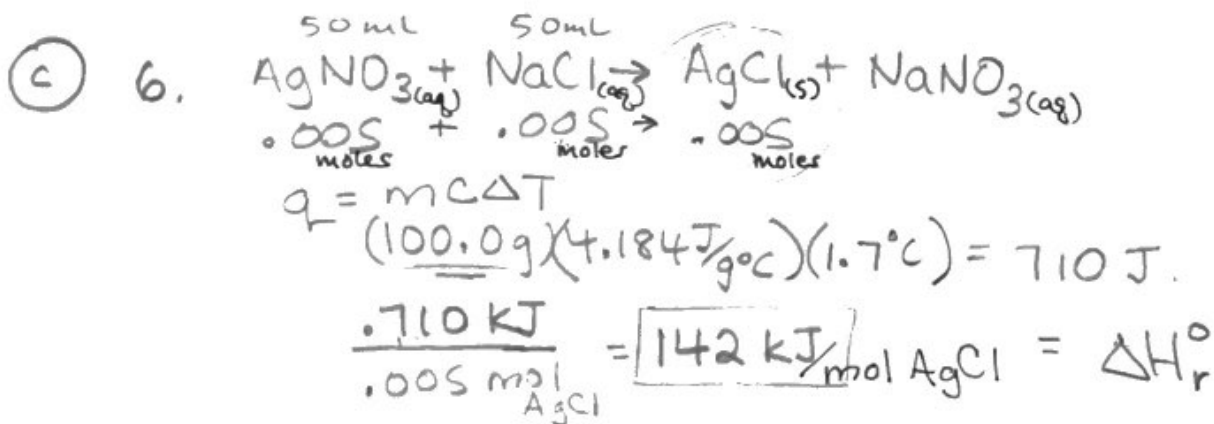
(B) 1. $\Delta E = q + w$
 $= +123\text{J} + (+151\text{J})$
 $= \boxed{274\text{kJ}}$

(D) 2. $\frac{12.0\text{g K}_2\text{O}_2}{1} \left| \frac{1\text{mole}}{110.20\text{g}} \right| \frac{153\text{kJ}}{2\text{mole}} = \boxed{8.33\text{kJ}}$

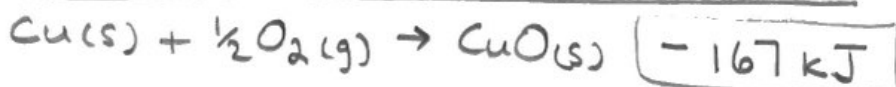
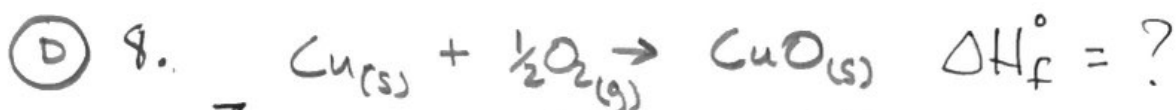
(A) 3. $m = \frac{q}{c\Delta T} = \frac{8100\text{J}}{(.450\text{J/g}^\circ\text{C})(28.5^\circ\text{C})} = \boxed{630\text{g}}$

(D) 4. $\Delta H_r = [3(0) + 5.40] - [-288.07 + 3(-92.30)]$
 $= +5.40 + 288.07 + 276.9$
 $= \boxed{570.37\text{kJ}}$

(B) 5.



(E) 7. $q = mc\Delta T$
 $= (52.0\text{g})(4.184\text{J/g}^\circ\text{C})(4.90^\circ\text{C})$
 $= 1070\text{J}$
 $\frac{1070\text{J}}{2.00\text{g}} \left| \frac{77.1\text{g}}{1\text{mole}} \right| \frac{1\text{kJ}}{1000\text{J}} = \boxed{41.2\text{kJ/mol NH}_4\text{C}_2\text{H}_3\text{O}_2$
 $\Delta H_{\text{soln}}^\circ$



(D) 9. $q = mc\Delta T$

$\Delta T = \frac{q}{mc} = \frac{6000 \text{ J}}{(16.55 \text{ g})(4.184 \text{ J/g}^\circ\text{C})} = 87^\circ\text{C}$

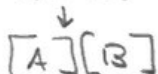
$20^\circ\text{C} + 87^\circ\text{C} = \boxed{107^\circ\text{C}}$



(B) 10. $q = C\Delta T$

$\Delta T = \frac{q}{C}$

(E) 11. $\text{Rate} = k[\text{D}][\text{B}]$



$= k[\text{A}][\text{B}]^2$

(C) 12. $w = -P\Delta V$

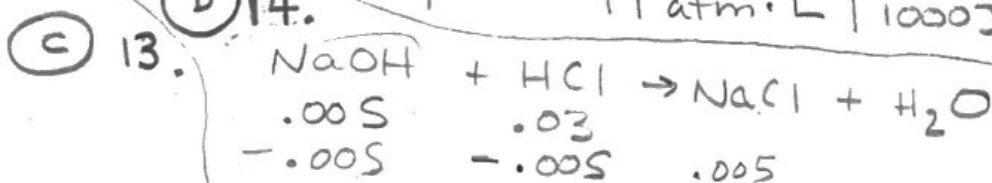
$= -(2.9 \text{ atm})(-82 \text{ L})$

$= 240 \text{ atm}\cdot\text{L} \quad | \quad 101.3 \text{ J} \quad | \quad 1 \text{ kJ}$

$\frac{2204 \text{ mmHg}}{760 \text{ mmHg}}$

1 atm

$\frac{240 \text{ atm}\cdot\text{L}}{1 \text{ atm}\cdot\text{L}} \cdot \frac{101.3 \text{ J}}{1000 \text{ J}} = \boxed{24 \text{ kJ}}$



$\frac{.005 \text{ mol}}{1} \cdot \frac{-110 \text{ kJ}}{1 \text{ mol}} = \boxed{.550 \text{ kJ}}$

